

III. AMENDMENTS TO THE DRAWINGS

Formal Replacement Drawing Figures 4 and 7 are filed herewith.
Replacement Drawing Figures 4 and 7 now show that the dotted lines are labeled.

V. REMARKS

Entry of the Amendment is proper under 37 C.F.R. §1.116 because the Amendment: a) places the application in condition for allowance for the reasons discussed herein; b) does not raise any new issue requiring further search and/or consideration because the Amendment amplifies issues previously discussed throughout prosecution; and c) places the application in better form for appeal, should an Appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to arguments raised in the final rejection. The amendments to the subject claims do not incorporate any new subject matter into the claims. Thus, entry of the Amendment is respectfully requested.

The Office Action recognizes the corrections to Figures 4 and 7. However, the Office Action finds these corrections to these figures are unacceptable because the dotted lines are

not labeled. The attached Replacement Sheets of Drawing Figures 4 and 7 now show the dotted lines being labeled.

Claims 1-9 and, presumptively 10-13, are rejected under 35 USC 102 (b) as being anticipated by Bartlett et al. (U.S. Patent No. 5,375,424). The rejection is respectfully traversed.

Bartlett teaches a cryopump that includes at least first and second stages in a cryopump chamber, a second stage heating element, a warm purge gas valve, a roughing valve and an electronic controller. The at least first and second stages in a cryopump chamber are cooled by a cryogenic refrigerator with an adsorbent on the second colder stage. The second stage heating element heats the second stage. The warm purge gas valve applies purge gas to the cryopump chamber. The roughing valve couples the cryopump chamber to a roughing pump. The electronic controller controls the heating element, purge gas valve and roughing valve. The controller is programmed to control a partial regeneration process while continuing

operation of the cryogenic refrigerator by heating the second stage of the cryopump; cycling between application of purge gas to the cryopump and opening of a roughing valve from the cryopump until the cryopump is sufficiently empty of gases condensed and adsorbed on the second stage; maintaining the roughing pump open to reduce pressure of the cryopump while continuing heating of the second stage; stopping heating of the second stage and continuing rough pumping of the cryopump with the roughing valve open to further reduce pressure of the cryopump; closing the roughing valve at a base pressure level; and, cyclically opening and closing the roughing valve as the cryopump cools down to maintain the pressure of the cryopump near to the base pressure level.

Claim 1, as amended, is directed to a water regeneration method for discharging ice condensed in a portion cooled by a cryogenic refrigerator installed in a case to an outside of the case. Claim 1 recites:

a temperature increasing step for melting the ice ice into water at approximately atmospheric pressure;

a vaporizing step for vaporizing water by performing a plurality of first roughing steps between the approximate atmospheric pressure and a first reduced pressure being less than the atmospheric pressure but higher than and yet close to a water-freezing pressure that causes the water to freeze;

a water discharge step for discharging water by performing a plurality of second roughing steps between a second reduced pressure and the first reduced pressure, the second reduced pressure being less than the atmospheric pressure and greater than the first reduced pressure; and

a water vapor discharging step for discharging water vapor at a third reduced pressure being less than the first reduced pressure.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 1 as amended. Specifically, it is respectfully submitted that the applied art fails to teach a vaporizing step for

vaporizing water by performing a plurality of first roughing steps between the approximate atmospheric pressure and a first reduced pressure being less than the atmospheric pressure but higher than and yet close to a water-freezing pressure that causes the water to freeze and a water discharge step for discharging water by performing a plurality of second roughing steps between a second reduced pressure and the first reduced pressure, the second reduced pressure being less than the atmospheric pressure and greater than the first reduced pressure. Furthermore, it is respectfully submitted that the applied art also fails to teach, in conjunction with the vaporizing step and the water discharge step, a water vapor discharging step for discharging water vapor at a third reduced pressure being less than the first reduced pressure. As a result, it is respectfully submitted that claim 1 is allowable over the applied art.

Claim 10, as amended, is directed to a water regeneration apparatus for discharging ice condensed in a portion cooled by a cryogenic refrigerator installed in a case to an outside of the case. Claim 10 recites that the water regeneration apparatus includes temperature increasing means, vaporizing means, water discharge means and water vapor discharging means. Claim 10 recites that the temperature increasing means melts the ice into water at approximately atmospheric pressure and the vaporizing means vaporizes the water by performing a plurality of first roughing steps between the approximate atmospheric pressure and a first reduced pressure being less than the atmospheric pressure but higher than and yet close to a water-freezing pressure that causes the water to freeze. Claim 10 also recites that the water discharge means discharges water to the outside of the case by performing a plurality of second roughing steps between a second reduced pressure and the first reduced pressure with the second reduced pressure being less than the atmospheric pressure and greater than the first reduced pressure. Further, claim 10 recites that the water vapor discharging means discharges water vapor at a third reduced pressure that is less than the first reduced pressure to the outside of the case.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 10 as amended. Specifically, it is respectfully submitted that the applied art fails to teach vaporizing means the vaporizes the water by performing a plurality of first roughing steps between the approximate atmospheric pressure and a first reduced pressure being less than the atmospheric pressure but higher than and yet close to a water-freezing pressure that causes the water to freeze, water discharge means that discharges water to the outside of the case by performing a plurality of second roughing steps between a second reduced pressure and the first reduced pressure with the second reduced pressure being less than the atmospheric pressure and greater than the first reduced pressure and water vapor discharging means that discharges water vapor at a third reduced pressure that is less than the first reduced pressure to the outside of the case. As a result, it is respectfully submitted that claim 10 is allowable over the applied art.

Support for the amendments is found in the specification on page 5, line 4 through page 6, line 10 as well as in Figure 7.

Claims 2-9 depend from claim 1 and include all of the features of claim 1. Thus, it is respectfully submitted that the dependent claims are allowable at least for the reason claim 1 is allowable as well as for the features they recite.

Claims 11-13 depend from claim 10 and include all of the features of claim 10. Thus, it is respectfully submitted that the dependent claims are allowable at least for the reason claim 10 is allowable as well as for the features they recite.

Withdrawal of the rejection is respectfully requested.

Claims 1 and 8 are rejected under 35 USC 102 (b) as being anticipated by Brezoczky et al. (U.S. Patent No. 6,122,921). The rejection is respectfully traversed.

Brezoczky discloses a vacuum system having a regeneration shield. The vacuum system includes a processing chamber, a vacuum pump, a dislocatable material and a mechanical regeneration shield. The vacuum pump is connected to

the processing chamber having a first stage array forming an internal volume and a second stage array disposed substantially within the internal volume of the first stage array. At least a portion of the first stage array is disposed between an inlet of the pump and the second stage array. The dislocatable material is attached to the second stage array and is disposed at least partially toward the first stage array. The mechanical regeneration shield is interposed between the second stage array and the first stage array. The shield is adapted to shield the second stage array from gases produced during regeneration of the pump.

As discussed above, claim 1, as amended, is directed to a water regeneration method for discharging ice condensed in a portion cooled by a cryogenic refrigerator installed in a case to an outside of the case. Claim 1 recites:

a temperature increasing step for melting the ice into water at approximately atmospheric pressure;

a vaporizing step for vaporizing water by performing a plurality of first roughing steps between the approximate atmospheric pressure and a first reduced pressure being less than the atmospheric pressure but higher than and yet close to a water-freezing pressure that causes the water to freeze;

a water discharge step for discharging water by performing a plurality of second roughing steps between a second reduced pressure and the first reduced pressure, the second reduced pressure being less than the atmospheric pressure and greater than the first reduced pressure; and

a water vapor discharging step for discharging water vapor at a third reduced pressure being less than the first reduced pressure.

As discussed above, it is respectfully submitted that the rejection is improper because the applied art fails to teach each and every element of claim 1 as amended. Specifically, it is respectfully submitted that the applied art fails to teach a vaporizing step for vaporizing water by performing a plurality of first roughing steps between the approximate atmospheric pressure and a first reduced pressure being

less than the atmospheric pressure but higher than and yet close to a water-freezing pressure that causes the water to freeze and a water discharge step for discharging water by performing a plurality of second roughing steps between a second reduced pressure and the first reduced pressure, the second reduced pressure being less than the atmospheric pressure and greater than the first reduced pressure.

Furthermore, it is respectfully submitted that the applied art also fails to teach, in conjunction with the vaporizing step and the water discharge step, a water vapor discharging step for discharging water vapor at a third reduced pressure being less than the first reduced pressure. As a result, it is respectfully submitted that claim 1 is allowable over the applied art.

Claim 8 depends from claim 1 and includes all of the features of claim 1. Thus, it is respectfully submitted that the dependent claim is allowable at least for the reasons claim 1 is allowable as well as for the features it recites.

Withdrawal of the rejection is respectfully requested.

It is respectfully submitted that the pending claims are believed to be in condition for allowance over the prior art of record. Therefore, this Amendment is believed to be a complete response to the outstanding Office Action. Further, Applicants assert that there are also reasons other than those set forth above why the pending claims are patentable. Applicants hereby reserve the right to set forth further arguments and remarks supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers.

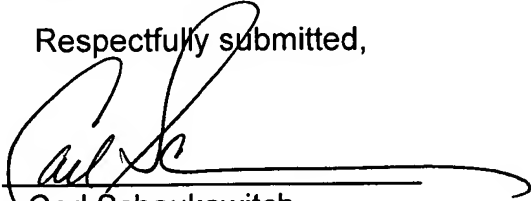
In view of the foregoing, reconsideration of the application and allowance of the pending claims are respectfully requested. Should the Examiner believe anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' representative at the telephone number listed below.

Should additional fees be necessary in connection with the filing of this paper

or if a Petition for Extension of Time is required for timely acceptance of the same, the Commissioner is hereby authorized to charge Deposit Account No. 18-0013 for any such fees and Applicant(s) hereby petition for such extension of time.

Respectfully submitted,

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By: 
Carl Schaukowitch
Reg. No. 29,211

RADER, FISHMAN & GRAUER PLLC
1233 20th Street, N.W. Suite 501
Washington, D.C. 20036
Tel: (202) 955-3750
Fax: (202) 955-3751
Customer No. 23353

Enclosure(s): Amendment Transmittal
 Replacement Sheets of Drawing Figures 4 and 7
 Annotated Sheets of Drawing Figures 4 and 7

DC335455.DOC

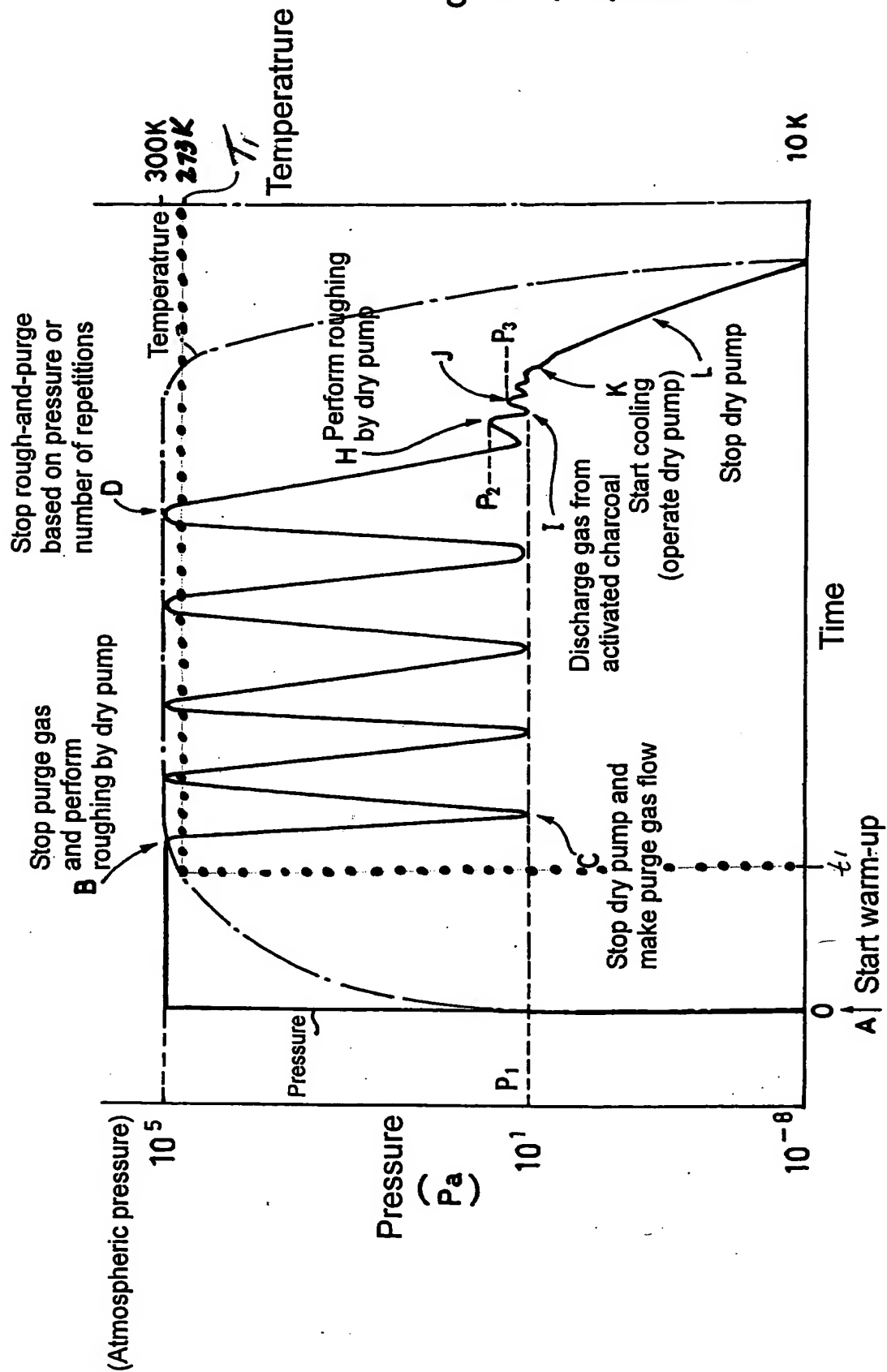
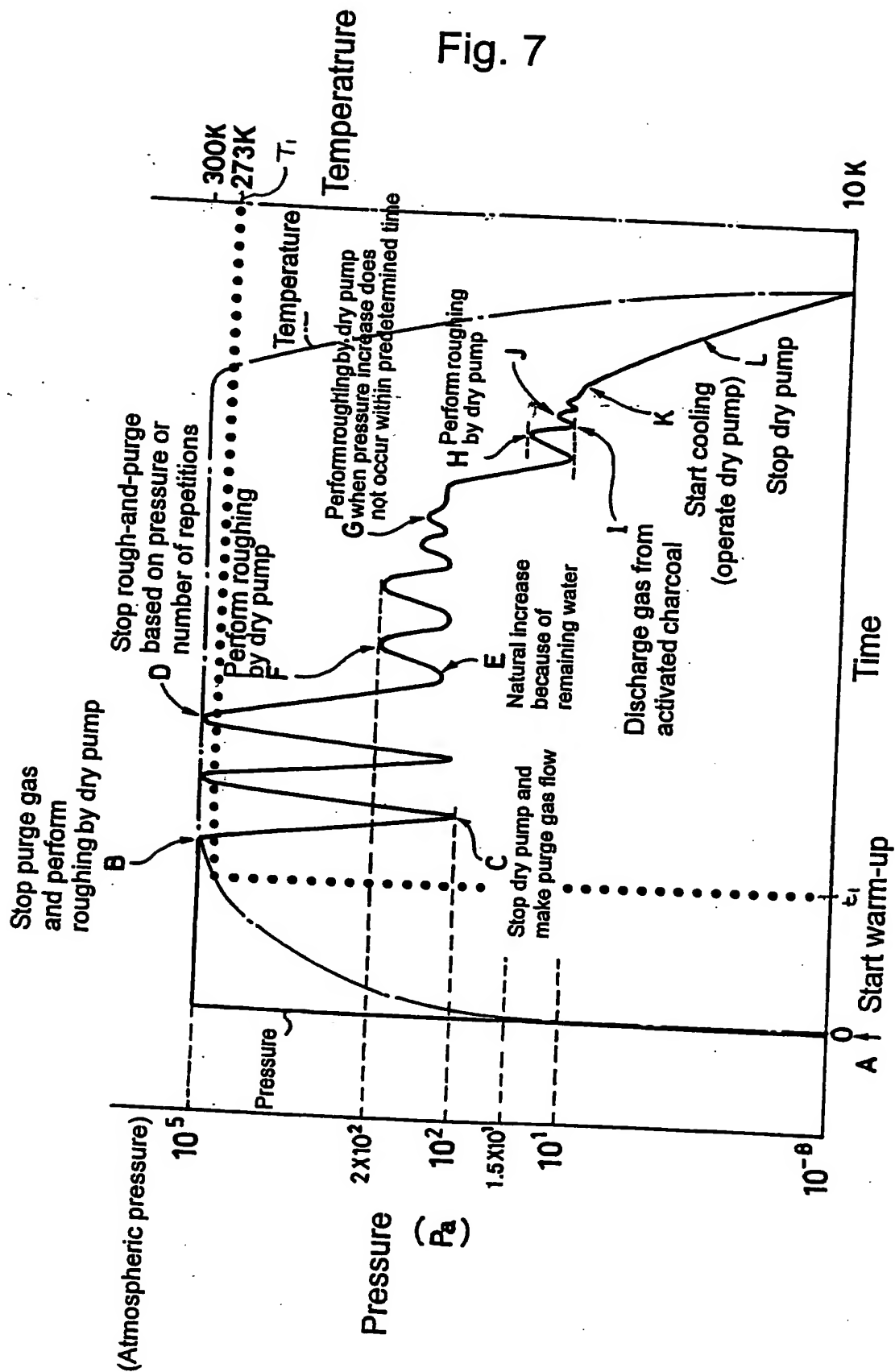
Fig. 4 *PRIOR ART*

Fig. 7



t_1 TIME WHEN A TEMPERATURE OF THE PORTION OF THE CASE IN WHICH THE ICE IS CONDENSED REACHES THE MELTING POINT OF THE ICE

T_1 TEMPERATURE OF THE MELTING POINT OF THE ICE, i.e., 273 K